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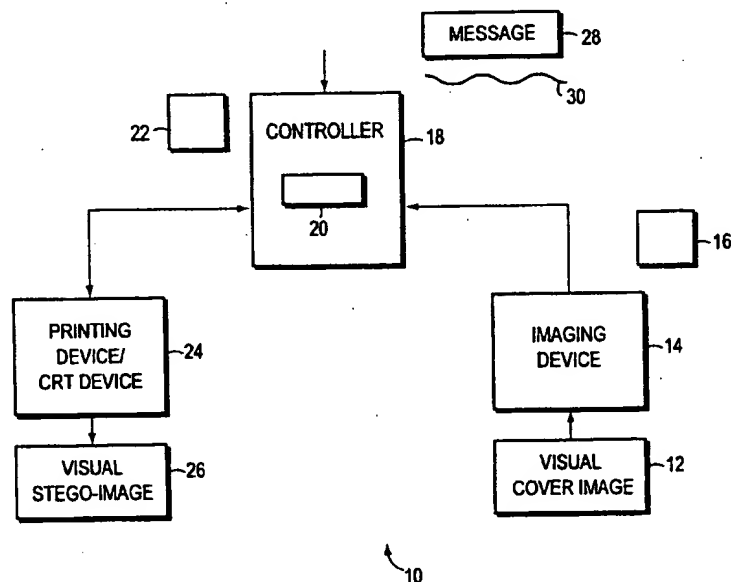
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- (71) Applicant (*for all designated States except US*): THE ESCHER GROUP, LTD. [US/US]; 12th floor, 101 Main Street, Cambridge, MA 02142 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): SMITH, Joshua, R. [US/US]; 194 Norfolk Street, Cambridge, MA 02139 (US).
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- (74) Agents: GAGNE, Christopher, K. et al.; Cesari and McKenna, LLP, 88 Black Falcon Avenue, Boston, MA 02210 (US).

[Continued on next page]

(54) Title: DATA ENCODING AND DECODING



(57) Abstract: Techniques are disclosed for encoding data in, and decoding encoded data from, images. In an embodiment of a technique according to a first aspect of the invention, a function used to encode data in one region of an image is itself encoded in another region of the image. This technique of the present invention may be used to advantage in image-based watermarking applications.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/16099

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06T1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06T

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 845 758 A (IBM) 3 June 1998 (1998-06-03)  column 2, line 46 -column 3, line 14 column 4, line 27 -column 5, line 46 column 6, line 33 - line 37	1-4, 9, 12, 13, 16-19, 24, 27, 28, 31-34, 39, 42, 43
A	HARTUNG AND GIROD: "DIGITAL WATERMARKING OF RAW AND COMPRESSED VIDEO" PROCEEDINGS OF THE SPIE, SPIE, BELLINGHAM, VA, US, vol. 2952, 7 October 1996 (1996-10-07), pages 205-213, XP002085796 page 207, line 17 - line 36	5, 10, 20, 25, 35, 40



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

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\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

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\*Y\* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

2 January 2001

Date of mailing of the international search report

12. 01. 01

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Burgaud, C

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 00/16099

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-4,9,12,13,16-19,24,27,28,31-34,39,42,43

Function of a first region used for watermarking a second region

2. Claims: 5-8,10,11,14,15,20-23,25,26,29,30,35-38,40,41,44,45

Watermarking in upsampled image

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/16099

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0845758 A	03-06-1998	JP 10164549 A	19-06-1998
		CA 2222346 A	28-05-1998
		CN 1184294 A	10-06-1998
		US 6005936 A	21-12-1999
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